

Microcross, a global one source provider of flexible semiconductor solutions for hi-rel applications, expands its standard product line with the addition of rad-tolerant and rad-hard logic components.



## RAD-FLEX™ LOGIC

Accelerated Semi-Custom RHA Logic

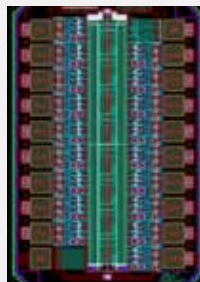
**Cost Effective:**  
Semi-Custom Logic Device Development

**Rapid Delivery:**  
3 Months for "ES" Parts, 10 Months for "QML/QED Flight" Units

**Development Flexibility:**  
Most Custom and Standard Logic Functions can be Implemented

Low Volume Requirement

Packaged Product Options Include:  
QML Ceramic 14, 16, 20, and 24LDt



"Sea of Gates"

**Speedy, Efficient Design Cycle:**  
With Apogee's "sea of gates" design structure and pre-organized I/O and Power, the logic implementation is done at final metal, allowing the creation of a single custom mask.

## LOGIC SOLUTIONS FOR SPACE

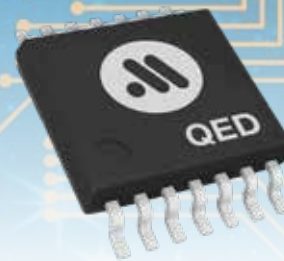
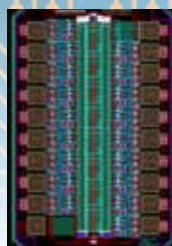
Microcross' rad-tolerant and rad-hard logic components are based on Apogee Semiconductor's Rad-Flex™ silicon, and available as:

- Bare Die
- Standard Components - OEM Plastic Packaging
- MIL-Temp Screened Integrated Circuits (ICs)
- MIL-PRF-38535 Qualified Plastic Encapsulated Microcircuits (NASA/ Goddard Space EEE-INST-002, Level 2 PEMs)
- MIL-PRF-38534 Qualified Hermetic ICs & MCMs

Microcross hermetic and non-hermetic qualified packaging, our QML-V, Q and QED Screening and Qualification flows which enable provisioning flight pedigree products for all severe environmental and radiation environments.

Microcross, in addition to our QML and QED RAD Logic components is Apogee's World-Wide distributor of Commercial, Industrial COTS package product & Die.

Microcross's Space Market heritage includes participation in numerous major Space programs including; Cassini, Milstar, Galileo, NPOESS & AEHF-16.



The MYXAP/AF54RHC Logic series is a family of radiation-hard by design, logic and special function devices designed to address unique design challenges faced by Space Systems Engineering Architects. It is fabricated on a 180nm CMOS process utilizing proprietary hardening techniques to deliver high SEE resiliency and TID performance of 30kRAD for our “AP” product group, 300kRAD for our “AP” product grouping. All MYXAP/AF54RHC components as well as our Partner’s commercial, Industrial and Mil-Temp components operate across the full 1.65V to 5.50V voltage range, providing the system designer flexibility in logic-level interfaces. In addition to the wide voltage range, zero-power cold sparing is offered on every input and output along with a class 2 ESD protection.

Product Ordering Information						
Part Number	Package	Pins	Description	Lead Finish	TID	SEL
Specialty Functions						
MYXAF54RHC245/V	Flat-Pack	20	8-Channel Transceiver	SnPb	300Krad (Si)	80 MeV/ mg/cm <sup>2</sup>
MYXAF54RHC245/Q	Flat-Pack	20			300Krad (Si)	
AF54RHC245ELT/BLT/ALT	TSSOP	20			300Krad (Si)	
MYXAP54RHC301/V	Flat-Pack	14	Dual 3-Input Majority Voter w/ error output	SnPb	30Krad (Si)	80 MeV/ mg/cm <sup>2</sup>
MYXAP54RHC301/Q	Flat-Pack	14			30Krad (Si)	
MYXAF54RHC301/V	Flat-Pack	14			300Krad (Si)	
MYXAF54RHC301/Q	Flat-Pack	14			300Krad (Si)	
AP54RHC301ELT/BLT/ALT	TSSOP	14			30Krad (Si)	
AF54RHC301ELT/BLT/ALT	TSSOP	14			300Krad (Si)	
AF54RHC301BLT	TSSOP	14			300Krad (Si)	
AF54RHC301ALT	TSSOP	14	300Krad (Si)			
MYXAP54RHC486/V	Flat-Pack	14	Dual I/O Arbiter	SnPb	30Krad (Si)	80 MeV/ mg/cm <sup>2</sup>
MYXAP54RHC486/Q	Flat-Pack	14			30Krad (Si)	
MYXAF54RHC486/V	Flat-Pack	14			300Krad (Si)	
MYXAF54RHC486/Q	Flat-Pack	14			300Krad (Si)	
AP54RHC486ELT/BLT/ALT	TSSOP	14			30Krad (Si)	
AF54RHC486ELT/BLT/ALT	TSSOP	14			300Krad (Si)	
MYXAP54RHC504/V	Flat-Pack	14	5-Channel Level Translator	SnPb	30Krad (Si)	80 MeV/ mg/cm <sup>2</sup>
MYXAP54RHC504/Q	Flat-Pack	14			30Krad (Si)	
MYXAF54RHC504/V	Flat-Pack	14			300Krad (Si)	
MYXAF54RHC504/Q	Flat-Pack	14				
AP54RHC504ELT/BLT/ALT	TSSOP	14				

## Product Ordering Information

Part Number	Package	Pins	Description	Lead Finish	TID	SEL
Specialty Functions						
MYXAP54RHC505/V	Flat-Pack	14	5-Channel Level Translator w/ Bus Hold	SnPb	30Krad (Si)	80 MeV/mg/cm <sup>2</sup>
MYXAP54RHC505/Q	Flat-Pack	14			30Krad (Si)	
MYXAF54RHC505/V	Flat-Pack	14			300Krad (Si)	
MYXAF54RHC505/Q	Flat-Pack	14			300Krad (Si)	
AP54RHC505ELT/BLT/ALT	TSSOP	14			30Krad (Si)	
MYXAP54RHC506/V	Flat-Pack	14	5-Channel 100MHz Transceiver	SnPb	30Krad (Si)	80 MeV/mg/cm <sup>2</sup>
MYXAP54RHC506/Q	Flat-Pack	14			30Krad (Si)	
MYXAF54RHC506/V	Flat-Pack	14			300Krad (Si)	
MYXAF54RHC506/Q	Flat-Pack	14			300Krad (Si)	
AP54RHC506ELT/BLT/ALT	TSSOP	14			30Krad (Si)	
MYXAP54RHC804/V	Flat-Pack	14	8-Channel Level Translator	SnPb	30Krad (Si)	80 MeV/mg/cm <sup>2</sup>
MYXAP54RHC804/Q	Flat-Pack	14			30Krad (Si)	
MYXAF54RHC804/V	Flat-Pack	14			300Krad (Si)	
MYXAF54RHC804/Q	Flat-Pack	14			300Krad (Si)	
MYXAP54RHC805/V	Flat-Pack	14	5-Channel Level Translator w/ Bus Hold	SnPb	30Krad (Si)	80 MeV/mg/cm <sup>2</sup>
MYXAP54RHC805/Q	Flat-Pack	14			30Krad (Si)	
MYXAF54RHC805/V	Flat-Pack	14			300Krad (Si)	
MYXAF54RHC805/Q	Flat-Pack	14			300Krad (Si)	
MYXAP54RHC806/V	Flat-Pack	14	5-Channel 100MHz Transceiver	SnPb	30Krad (Si)	80 MeV/mg/cm <sup>2</sup>
MYXAP54RHC806/Q	Flat-Pack	14			30Krad (Si)	
MYXAF54RHC806/V	Flat-Pack	14			300Krad (Si)	
MYXAF54RHC806/Q	Flat-Pack	14			300Krad (Si)	
MYXAP54RHC705/V	Flat-Pack	14	Dual D-Flip Flop w/ Asynchronous Clear	SnPb	30Krad (Si)	80 MeV/mg/cm <sup>2</sup>
MYXAP54RHC705/Q	Flat-Pack	14			30Krad (Si)	
AP54RHC705ELT/BLT/ALT	TSSOP	14			30Krad (Si)	
7400 Series Logic Functions						
MYXAP54RHC00/V	Flat-Pack	14	Quad 2-Input NAND	SnPb	30Krad (Si)	80 MeV/mg/cm <sup>2</sup>
MYXAP54RHC00/Q	Flat-Pack	14			30Krad (Si)	
MYXAF54RHC00/V	Flat-Pack	14			300Krad (Si)	
MYXAF54RHC00/Q	Flat-Pack	14			300Krad (Si)	
AP54RHC00ELT/BLT/ALT	TSSOP	14			30Krad (Si)	
AF54RHC00ELT/BLT/ALT	TSSOP	14			300Krad (Si)	
MYXAP54RHC02/V	Flat-Pack	14	Quad 2-Input NOR	SnPb	30Krad (Si)	80 MeV/mg/cm <sup>2</sup>
MYXAP54RHC02/Q	Flat-Pack	14			30Krad (Si)	
MYXAF54RHC02/V	Flat-Pack	14			300Krad (Si)	
MYXAF54RHC02/Q	Flat-Pack	14			300Krad (Si)	

## Product Ordering Information

Part Number	Package	Pins	Description	Lead Finish	TID	SEL
AP54RHC02ELT/BLT/ALT	TSSOP	14	Quad 2-Input NOR	SnPb		80 MeV/ mg/cm <sup>2</sup>
AF54RHC02ELT/BLT/ALT	TSSOP	14				
MYXAP54RHC04/V	Flat-Pack	14	Hex Inverter	SnPb		80 MeV/ mg/cm <sup>2</sup>
MYXAP54RHC04/Q	Flat-Pack	14				
AP54RHC04ELT/BLT/ALT	TSSOP	14				
MYXAP54RHC05/V	Flat-Pack	14	Hex Inverter, Open Drain	SnPb		80 MeV/ mg/cm <sup>2</sup>
MYXAP54RHC05/Q	Flat-Pack	14				
AP54RHC05ELT/BLT/ALT	TSSOP	14				
MYXAP54RHC08/V	Flat-Pack	14	Quad 2-Input AND	SnPb		80 MeV/ mg/cm <sup>2</sup>
MYXAP54RHC08/Q	Flat-Pack	14				
AP54RHC08ELT/BLT/ALT	TSSOP	14				
MYXAP54RHC10/V	Flat-Pack	14	Triple 3-Input NAND	SnPb		80 MeV/ mg/cm <sup>2</sup>
MYXAP54RHC10/Q	Flat-Pack	14				
AP54RHC10ELT/BLT/ALT	TSSOP	14				
MYXAP54RHC27/V	Flat-Pack	14	Triple 3-Input NOR	SnPb		80 MeV/ mg/cm <sup>2</sup>
MYXAP54RHC27/Q	Flat-Pack	14				
AP54RHC27ELT/BLT/ALT	TSSOP	14				
MYXAP54RHC32/V	Flat-Pack	14	Quad 2-Input OR	SnPb		80 MeV/ mg/cm <sup>2</sup>
MYXAP54RHC32/Q	Flat-Pack	14				
AP54RHC32ELT/BLT/ALT	TSSOP	14				
MYXAF54RHC14/V	Flat-Pack	14	Hex Inverter, Schmitt	SnPb		80 MeV/ mg/cm <sup>2</sup>
MYXAF54RHC14/Q	Flat-Pack	14				
AF54RHC14ELT/BLT/ALT	TSSOP	14				
MYXAF54RHC86/V	Flat-Pack	14	Quad 2-Input XOR	SnPb		80 MeV/ mg/cm <sup>2</sup>
MYXAF54RHC86/Q	Flat-Pack	14				
AF54RHC86ELT/BLT/ALT	TSSOP	14				
MYXAF54RHC132/V	Flat-Pack	14	Quad 2-Input NAND, Schmitt	SnPb		80 MeV/ mg/cm <sup>2</sup>
MYXAF54RHC132/Q	Flat-Pack	14				
AF54RHC132ELT/BLT/ALT	TSSOP	14				

### About Micross

Micross is the most complete provider of advanced microelectronic services and component, die and wafer solutions. With the broadest authorized access to die & wafer suppliers, an extensive portfolio of hi-rel power, RF, optoelectronics, memory, data bus, logic, and SMD/5962 qualified products, and the most comprehensive advanced packaging, assembly, modification, upscreaming, and test capabilities, Micross is uniquely positioned to provide unparalleled high-reliability solutions, from bare die, to fully packaged devices including hermetic ICs/MCMs, PEMS, ASICs, FPGAs, and PCBs, to complete program life-cycle sustainment. For more than 40 years, Micross has been a trusted source for the aerospace, defense, space, medical, energy, communications, and industrial markets.



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